

WHAT IS CLAIMED IS:

1. A radiation therapy treatment planning machine for use with a multileaf collimator, said machine comprising:

a Multileaf-Collimator-Position-Calculation-Unit operable to generate multileaf collimator leaf positions as a time series;

a Motion-Speed-Calculating-Unit operable to calculate leaf motion speed based on the generated time series leaf positions;

a Motion-Speed-Limit-Establishing-Unit operable to establish a motion speed limit of the leaves; and

a Motion-Display-Unit operable to indicate leaf motion information and to indicate the motion information of an area where the calculated motion speed exceeds the established motion speed limit.

2. The radiation therapy treatment planning machine according to claim 1, wherein said Motion-Speed-Limit-Establishing-Unit comprises a Motion-Speed-Limit-Inputting-Unit operable to input a motion speed limit of the leaves as the established motion speed limit.

3. The radiation therapy treatment planning machine according to claim 2, further comprising:

a Motion-Acceleration-Calculating-Unit operable to calculate leaf motion acceleration based on the time series leaf positions generated by said Multileaf-Collimator-Position-Calculation-Unit; and

a Motion-Acceleration-Limit-Inputting-Unit operable to input a motion acceleration limit of the leaves,

wherein said Motion-Display-Unit is further operable to indicate the motion information of an area where the calculated motion acceleration exceeds the inputted acceleration limit.

4. The radiation therapy treatment planning machine according to claim 1, wherein said Motion-Speed-Limit-Establishing-Unit comprises a Motion-Speed-Limit-Setting-Unit operable to set a predetermined motion speed limit of the leaves as the established motion speed limit.

5. The radiation therapy treatment planning machine according to claim 4, further comprising:

a Motion-Acceleration-Calculating-Unit operable to calculate leaf motion acceleration based on the time series leaf positions generated by said Multileaf-Collimator-Position-Calculation-Unit; and

a Motion-Acceleration-Limit-Setting-Unit operable to set a predetermined motion acceleration limit of the leaves,

wherein said Motion-Display-Unit is further operable to indicate the motion information of an area where the calculated motion acceleration exceeds the predetermined set acceleration limit.

6. The radiation therapy treatment planning machine according to claim 1, further comprising:

a Motion-Acceleration-Calculating-Unit operable to calculate leaf motion acceleration based on the time series leaf positions generated by said Multileaf-Collimator-Position-Calculation-Unit,

wherein said Motion-Display-Unit is further operable to indicate the motion information of an area where the calculated motion acceleration exceeds a motion acceleration limit.

7. A radiation therapy treatment planning machine for use with a multileaf collimator, said machine comprising:

a Multileaf-Collimator-Position-Calculation-Unit operable to generate multileaf collimator leaf positions as a time series;

a Motion-Speed-Calculating-Unit operable to calculate leaf motion speed based on the generated time series leaf positions;

a Motion-Speed-Limit-Establishing-Unit operable to establish a motion speed limit of the leaves; and

a Leaf-Position-Correction-Unit operable to correct the leaf positions of an area, where the calculated motion speed exceeds the established motion speed limit, in order for the leaf motion speed to be equal to or less than the established motion speed limit.

8. The radiation therapy treatment planning machine according to claim 7, wherein said Motion-Speed-Limit-Establishing-Unit comprises a Motion-Speed-Limit-Inputting-Unit operable to input a motion speed limit of the leaves as the established motion speed limit.

9. The radiation therapy treatment planning machine according to claim 8, wherein the leaf positions are corrected toward a direction to widen the radiation field shape when said Leaf-Position-Correction-Unit corrects the leaf positions of an area where the calculated motion speed exceeds the inputted motion speed limit in order for the leaf motion speed to be equal to or less than the inputted motion speed limit.

10. The radiation therapy treatment planning machine according to claim 9, further comprising:

a Motion-Acceleration-Calculating-Unit operable to calculate leaf motion acceleration based on the leaf positions corrected by said Leaf-Position-Correction-Unit; and

a Motion-Acceleration-Limit-Inputting-Unit operable to input a motion acceleration limit of the leaves,

wherein said Leaf-Position-Correction-Unit is further operable to correct the leaf positions of an area, where the calculated motion acceleration exceeds the inputted acceleration limit, in order for the leaf motion acceleration to be equal to or less than the inputted acceleration limit.

11. The radiation therapy treatment planning machine according to claim 8, wherein the leaf positions are corrected toward a direction to narrow the radiation field shape when said Leaf-Position-Correction-Unit corrects the leaf positions of an area where the calculated motion speed exceeds the inputted motion speed limit in order for the leaf motion speed to be equal to or less than the inputted motion speed limit.

12. The radiation therapy treatment planning machine according to claim 11, further comprising:

a Motion-Acceleration-Calculating-Unit operable to calculate leaf motion acceleration based on the leaf positions corrected by said Leaf-Position-Correction-Unit; and

a Motion-Acceleration-Limit-Inputting-Unit operable to input a motion acceleration limit of the leaves,

wherein said Leaf-Position-Correction-Unit is further operable to correct the leaf positions of an area, where the calculated motion acceleration exceeds the inputted acceleration limit, in order for the leaf motion acceleration to be equal to or less than the inputted acceleration limit.

13. The radiation therapy treatment planning machine according to claim 8, further comprising:

a Motion-Acceleration-Calculating-Unit operable to calculate leaf motion acceleration based on the leaf positions corrected by said Leaf-Position-Correction-Unit; and

a Motion-Acceleration-Limit-Inputting-Unit operable to input a motion acceleration limit of the leaves,

wherein said Leaf-Position-Correction-Unit is further operable to correct the leaf positions of an area, where the calculated motion acceleration exceeds the inputted acceleration limit, in order for the leaf motion acceleration to be equal to or less than the inputted acceleration limit.

14. The radiation therapy treatment planning machine according to claim 7, wherein said Motion-Speed-Limit-Establishing-Unit comprises a Motion-Speed-Limit-Setting-Unit operable to set a predetermined motion speed limit of the leaves as the established motion speed limit.

15. The radiation therapy treatment planning machine according to claim 14, wherein the leaf positions are corrected toward a direction to widen the radiation field shape when said Leaf-Position-Correction-Unit corrects the leaf positions of an area where the calculated motion speed exceeds the predetermined set motion speed limit in order for the leaf motion speed to be equal to or less than the predetermined set motion speed limit.

16. The radiation therapy treatment planning machine according to claim 15, further comprising:

a Motion-Acceleration-Calculating-Unit operable to calculate leaf motion acceleration based on the leaf positions corrected by said Leaf-Position-Correction-Unit; and

a Motion-Acceleration-Limit-Setting-Unit operable to set a motion acceleration limit of the leaves,

wherein said Leaf-Position-Correction-Unit is further operable to correct the leaf positions of an area, where the calculated motion acceleration exceeds the predetermined set acceleration limit, in order for the leaf motion acceleration to be equal to or less than the predetermined set acceleration limit.

17. The radiation therapy treatment planning machine according to claim 14, wherein the leaf positions are corrected toward a direction to narrow the radiation field shape when said Leaf-Position-Correction-Unit corrects the leaf positions of an area where the calculated motion speed exceeds the predetermined set motion speed limit in order for the leaf motion speed to be equal to or less than the predetermined set motion speed limit.

18. The radiation therapy treatment planning machine according to claim 17, further comprising:

a Motion-Acceleration-Calculating-Unit operable to calculate leaf motion acceleration based on the leaf positions corrected by said Leaf-Position-Correction-Unit; and

a Motion-Acceleration-Limit-Setting-Unit operable to set a motion acceleration limit of the leaves,

wherein said Leaf-Position-Correction-Unit is further operable to correct the leaf positions of an area, where the calculated motion acceleration exceeds the predetermined set acceleration limit, in order for the leaf motion acceleration to be equal to or less than the predetermined set acceleration limit.

19. The radiation therapy treatment planning machine according to claim 14, further comprising:

a Motion-Acceleration-Calculating-Unit operable to calculate leaf motion acceleration based on the leaf positions corrected by said Leaf-Position-Correction-Unit; and

a Motion-Acceleration-Limit-Setting-Unit operable to set a predetermined motion acceleration limit of the leaves,

wherein said Leaf-Position-Correction-Unit is further operable to correct the leaf positions of an area, where the calculated motion acceleration exceeds the predetermined set acceleration limit, in order for the leaf motion acceleration to be equal to or less than the predetermined set acceleration limit.

20. A radiation therapy treatment planning machine for use with a multileaf collimator, said machine comprising:

a Multileaf-Collimator-Position-Calculation-Unit operable to generate multileaf collimator leaf positions as a time series;

a Motion-Acceleration-Calculating-Unit operable to calculate leaf motion acceleration based on the generated time series leaf positions;

a Motion-Acceleration-Limit-Establishing-Unit operable to establish a motion acceleration limit of the leaves; and

a Motion-Display-Unit operable to indicate leaf motion information of an area where the calculated motion acceleration exceeds the established acceleration limit.

21. The radiation therapy treatment planning machine according to claim 20, wherein said Motion-Acceleration-Limit-Establishing-Unit comprises a Motion-Acceleration-Limit-Inputting-Unit operable to input a motion acceleration limit of the leaves as the established motion acceleration limit.

22. The radiation therapy treatment planning machine according to claim 20, wherein said Motion-Acceleration-Limit-Establishing-Unit comprises a Motion-Acceleration-Limit-Setting-Unit operable to set a predetermined motion acceleration limit of the leaves as the established motion acceleration limit.

23. A radiation therapy treatment planning machine for use with a multileaf collimator, said machine comprising:

a Multileaf-Collimator-Position-Calculation-Unit operable to generate multileaf collimator leaf positions as a time series;

a Motion-Acceleration-Calculating-Unit operable to calculate leaf motion acceleration based on the generated time series leaf positions;

a Motion-Acceleration-Limit-Establishing-Unit to establish a motion acceleration limit of the leaves; and

a Leaf-Position-Correction-Unit operable to correct the leaf positions of an area, where the calculated motion acceleration exceeds the established motion acceleration limit, in order for the leaf motion acceleration to be equal to or less than the established motion acceleration limit.

24. The radiation therapy treatment planning machine according to claim 23, wherein said Motion-Acceleration-Limit-Establishing-Unit comprises a Motion-Acceleration-Limit-Inputting-Unit operable to input a motion acceleration limit of the leaves as the established motion acceleration limit.

25. The radiation therapy treatment planning machine according to claim 23, wherein said Motion-Acceleration-Limit-Establishing-Unit comprises a Motion-Acceleration-Limit-Setting-Unit operable to set a predetermined motion acceleration limit of the leaves as the established motion acceleration limit.